

# Diabetes and Hepatopathy: Epidemiological and Clinical Profile in the Internal Medicine Department of CHU Donka

Djibril Sylla\*, Amadou Kake, Mamadou Lamine Yaya Bah, Mamadou Diakhaby, Pivi Govou, Amadou Tidiane Diallo, Thierno Amadou Wann, Mohamed Lamine Conté, Mohamed Cissoko

Internal Medicine Department of Donka National Hospital, Conakry, Guinea

Email: \*docdjibril@gmail.com

**How to cite this paper:** Sylla, D., Kake, A., Bah, M.L.Y., Diakhaby, M., Govou, P., Diallo, A.T., Wann, T.A., Conté, M.L. and Cissoko, M. (2024) Diabetes and Hepatopathy: Epidemiological and Clinical Profile in the Internal Medicine Department of CHU Donka. *Open Journal of Internal Medicine*, 14, 356-362.

<https://doi.org/10.4236/ojim.2024.144033>

**Received:** November 15, 2024

**Accepted:** December 22, 2024

**Published:** December 25, 2024

Copyright © 2024 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

**Introduction:** The objective of this study was to evaluate the clinical characteristics of patients with coexistence of diabetes and liver disease in the internal medicine department of Donka University Hospital. Diabetes is defined as chronic hyperglycemia resulting from genetic and environmental phenomena. Chronic liver disease is a disease of the liver that persists over a long period of time. According to the WHO, diabetes is one of the four non-communicable diseases targeted along with cardiovascular diseases, cancers and respiratory diseases. Viral infections, particularly hepatitis B and C, are common causes of liver disease, affecting approximately 325 million people worldwide. **Methods:** It was a study descriptive type prospective study lasting 15 months from March 1, 2023 to June 30, 2024. We have included all patients admitted for chronic liver disease on the grounds of known diabetes or incidental discovery whose age  $\geq 18$  years, regardless of gender, from any origin managed in the internal medicine department, with diagnostic criteria blood glucose  $\geq 1.26$  g/l [7 mmol/l] on two occasions after fasting for more than 8 hours, or venous blood glucose at any time of the day  $\geq 2$  g/l [11.1 mmol/l] with signs of hyperglycemia or blood glucose 2 hours after a glucose load (OGTT at 75 g of glucose)  $\geq 2$  g/l [11.1 mmol/l], HbA1c  $\geq 6.5$  after eliminating hemoglobinopathies and having given verbal consent. **Results:** Out of 809 hospitalized patients, 50 patients had liver disease associated with diabetes. The mean age of the patients was 54.7 years with extremes of 25 and 95 years. The male sex was predominant with a sex ratio of 1.24. Asthenia was the main sign of diabetes encountered and the main signs of liver disease were lower limb edema and jaundice. The main complication of diabetes was dominated by strokes (36%) and liver diseases: gastrointestinal bleeding and hepatic encephalopathy. **Conclusion:** The prevalence of the association of diabetes and liver disease was not negligible during our study. Emphasis should be placed on strengthening early

detection of diabetes and liver disease and appropriate management.

## Keywords

Diabetes, Liver Disease, Internal Medicine, Donka National Hospital

---

## 1. Introduction

Diabetes is a chronic hyperglycemia resulting from genetic and environmental phenomena and can lead to long-term complications affecting small and large vessels. The diagnostic criteria for diabetes are: if the blood glucose level  $\geq 1.26$  g/l on 2 occasions fasting for more than 8 hours or venous blood glucose at any time of the day  $\geq 2$  g/l with signs of hyperglycemia or blood glucose 2 hours later (OGTT at 75 g of glucose)  $\geq 2$  g/l or HbA1c  $\geq 6.5$  [1]. Diabetes represents for the World Health Organization (WHO) one of the 4 noncommunicable diseases targeted with cardiovascular diseases, cancers and respiratory diseases [2]. It is estimated that there are 463 million adults aged 20 to 79 years living with diabetes and 79.4% of them live in low-income and middle-income countries. According to 2019 estimates, 578.4 million adults aged 20 - 79 years are expected to be living with diabetes by 2030 and 700.2 million by 2045, representing a prevalence of 10.9% [3]. Chronic liver disease, defined as liver disease that persists over a prolonged period, is a major public health problem. Viral infections, especially hepatitis B and C are recognized as common causes of chronic liver disease, affecting approximately 325 million people worldwide [4]. A link between chronic viral hepatitis and type II diabetes mellitus was first suspected many years ago, many trials have reinforced the belief that the 2 entities are indeed linked, although the exact pathophysiological mechanisms have not been established, hepatitis C (HCV) is more frequently associated with diabetes, compared to hepatitis B virus (HBV) infection [5]. In Belgium in 2014, Jaafar J. *et al.* [6] reported that type 2 diabetic patients frequently had hepatic steatosis or other chronic liver diseases, moreover 30% of cirrhotic patients had diabetes. In Morocco in 2009, Latrech *et al.* [7] revealed that the prevalence of diabetes in cirrhotic patients was 48%. In Guinea in 2007, Baldé *et al.* [8] found 8.6% of diabetics with hepatitis B. Given the hospital frequency of this association in our department, the delay in consultation and the lack of recent data motivated the choice of this study.

## 2. Methods

It was a study descriptive type prospective study lasting 15 months from March 1, 2023 to June 30, 2024. We included in this study all patients admitted for liver disease on the grounds of known diabetes or incidental discovery whose age  $\geq 18$  years, regardless of gender, from any origin supported in the internal medicine department and with diagnostic criteria blood glucose  $\geq 1.26$  g/l [7 mmol/l] on two occasions after fasting for more than 8 hours, or venous blood glucose at any

time of the day  $\geq 2$  g/l [11.1 mmol/l] with signs of hyperglycemia or blood glucose 2 hours after a glucose load (OGTT at 75 g of glucose)  $\geq 2$  g/l [11.1 mmol/l], HbA1c  $\geq 6.5$  after ruling out hemoglobinopathies and having given verbal consent having given verbal consent. Data collection was carried out on of all the files of patients followed up in the Internal Medicine department hospitalized and presenting with liver disease associated with diabetes, we have: in a first step, we have identified the data from the inter-hospital system (SIH) of the Donka national hospital of patients followed up for liver diseases associated with diabetes, then in a second step, we have filled out the individualized survey form from the data collected in SIH, and finally we have analyzed each survey form according to our patient inclusion criteria. The data collected from the results on the survey forms were entered and then analyzed using Epi info software version 3.5.4.

The data was collected anonymously, used for strictly scientific purposes and confidentiality was respected.

### 3. Results

The male sex was predominant at 70% (35) against the female sex at 30% (15) with a sex ratio of 1.24.

**Table 1.** Distribution of patients according to signs related to diabetes from March 1, 2023 to June 30, 2024, asthenia was the most common sign of liver disease in 31 cases or 62%, followed by weight loss and intense thirst in 27 cases or 54%.

Signs	Workforce (N = 50)	Proportion (%)
<b>Physical asthenia</b>	<b>31</b>	<b>62.0</b>
Weight loss	27	54.0
intense thirst	27	54.0
Visual blur	16	32.0
Polyuria	23	46.0
Polyphagia	8	16.0
IMO	15	30.0
Tingling	14	28.0
Increased feeling of hunger	18	36.0

**Table 2.** Distribution of patients according to signs related to chronic liver diseases from March 1, 2023 to June 30, 2024, lower limb edema and jaundice were the main dominant signs, respectively 86% and 88%.

Signs	Workforce (N = 50)	Proportion (%)
Jaundice	43	86.0
Abdominal pain	30	60.0
Abdominal distension	38	76.0
Digestive disorders	17	34.0

## Continued

Itching	20	40.0
Hemorrhage	23	46.0
Ascite	26	52.0
<b>Edema of the lower limbs</b>	<b>44</b>	<b>88.0</b>
Dyspnea	17	34.0
Persistent fatigue	16	32.0

**Table 3.** Distribution of patients according to complications related to diabetes from March 1, 2023 to June 30, 2024, Stroke was the most common macroangiopathy complication (18 cases or 36%), and Diabetic Retinopathy was the most common microangiopathy complication (16 cases or 32%).

Complications	Workforce (N = 50)	Proportion (%)
<b>Macroangiopathies</b>		
AOMI	15	30
Coronary artery disease	4	8.0
<b>Stroke</b>	<b>18</b>	<b>36.0</b>
<b>Microangiopathies</b>		
Diabetic nephropathy	8	16.0
<b>Diabetic retinopathy</b>	<b>16</b>	<b>32.0</b>

**Table 4.** Distribution of patients according to complications related to liver diseases from March 1, 2023 to June 30, 2024, digestive hemorrhage and hepatic encephalopathy were dominated, respectively 96% and 68%.

Liver complications	Workforce (N = 50)	Proportion (%)
Hepatocellular carcinoma	24	48.0
<b>Hepatic encephalopathy</b>	<b>34</b>	<b>68.0</b>
<b>Digestive hemorrhage</b>	<b>48</b>	<b>96.0</b>
Hepatorenal syndrome	21	42.0
Liver failure	30	60.0

#### 4. Discussion

Chronic liver disease and diabetes constitute a major public health problem with significant morbidity and mortality, Chronic infection with hepatitis C virus (HCV) results in the occurrence of severe chronic liver disease with metabolic complications such as diabetes mellitus, which occupies an important place according to literature data.

During the period, out of a total of 809 hospitalized patients, 50 patients had a combination of liver disease and diabetes, is 6.2% (**Table 1**). Kabbaj N [9] had reported 17.2% in his study. In another study, conducted in the United States

during the period 1999-2010, the prevalence of hepatitis B infection in adult diabetic patients was 60% [10].

The low prevalence in our study reflects the underdiagnosis of liver diseases in patients with diabetes, which under diagnosis requires targeted interventions to address the many challenges facing health structures in underdeveloped countries. According to CDC investigations, hepatitis B and C viruses can be contracted by: shared use of blood glucose monitoring devices, shared use of the same injection equipment, such as syringes or insulin pens, cross-contamination of clean supplies with devices soiled blood glucose monitoring used by health home agencies, inaccurate sterilization of soiled equipment, poor hand hygiene [11] (Table 2).

The average age reported during our study was 54.7 years with extremes of 25 and 95 years. Ameer FZ *et al.* [12] had found an average age of 54 years. On the one hand, diabetes is a disease that increases with age, this is probably linked to the accumulation of bad eating habits, to the aging of cells as the body ages and on the other hand, according to literature the Metabolic factors are likely to interfere with the natural history of HCV infection, the rate of progression of fibrosis is high in obese subjects with a BMI > 30 kg/m<sup>2</sup>.

The male sex was the majority in our study. Diarra MT *et al.* [13] had found a female predominance with respective sex ratios of 0.38. This result may be justified by the occurrence of complications with poor lifestyle such as tobacco, alcohol, multiple sexual partners Physical asthenia was the most common manifestation found in our study. GEIST C. [14] in 2013 in the emergency room of Strasbourg which had a frequency of 21%. This could be explained by the fact that asthenia is a frequent reason for consultation in internal medicine but also reflects the chronic mode of evolution of the disease.

Digestive hemorrhage (DH) due to rupture of esophageal varices (RVO) and hepatic encephalopathy (HE) were the most common complications encountered during our study. Ouavene JO *et al.* [15] in their study reported that the main complications were dominated by digestive hemorrhage (19.5%) and hepatic encephalopathy (19%). Stroke and diabetic retinopathy represented the most common chronic complications found during our study. Mahamane SA *et al.* [16] found 79.5% for neuropathy, 32.1% for diabetic retinopathy. This result could be explained by the delay in diagnosis and patients consulting health facilities at the stage of complications or decompensation of diabetes or hepatopathy, our results are consistent with the data in the literature. During its progression, diabetes can cause serious complications affecting the heart, blood vessels, eyes, kidneys and nerves. Cohort or case-control studies in the United States, Europe and the Asia-Pacific region show that DT2 increases the risk of developing HCC by 2 to 3 times, regardless of cirrhosis or the concomitant presence of other causes of chronic liver disease. The risk of HCC appears to be correlated with the duration and control of diabetes [17] (Table 3, Table 4).

## 5. Conclusion

Chronic liver disease in diabetic patients was not negligible during our study and

concerned an average age of 55 years, mostly male and type II diabetic. Stroke and diabetic retinopathy were the most common complications of diabetes and progressive complications were marked by hepatic encephalopathy and HCC. Emphasis should be placed on strengthening preventive methods for diabetes and chronic liver disease. Further studies are necessary to determine the role of each pathology in the occurrence of complications.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

### References

- [1] Guariguata, L., Whiting, D., Weil, C. and Unwin, N. (2011) The International Diabetes Federation Diabetes Atlas Methodology for Estimating Global and National Prevalence of Diabetes in Adults. *Diabetes Research and Clinical Practice*, **94**, 322-332. <https://doi.org/10.1016/j.diabres.2011.10.040>
- [2] Zahm, V. (2020) Therapeutic Strategy in Type 2 Diabetes: Practical Survey on the Therapeutic Attitude of French General Practitioners in Relation to National Recommendations. Thesis of Medicine, University of Strasbourg.
- [3] International Diabetes Federation (2022) Diabetes Atlas 2022. 10th Edition, International Diabetes Federation.
- [4] Askenasy, E.M. and Askenasy, N. (2013) Is Autoimmune Diabetes Caused by Aberrant Immune Activity or Defective Suppression of Physiological Self-Reactivity? *Autoimmunity Reviews*, **12**, 633-637. <https://doi.org/10.1016/j.autrev.2012.12.004>
- [5] Antonelli, A., Ferrari, S.M., Giuggioli, D., Di Domenicantonio, A., Ilaria Ruffilli, I., Corrado, A., *et al.* (2014) Hepatitis C Virus Infection and Type 1 and Type 2 Diabetes Mellitus. *World Journal of Diabetes*, **5**, 586-600. <https://doi.org/10.4239/wjd.v5.i5.586>
- [6] Jaafar, J., de Kalbermatten, B., Scheen, A.J. and Jornayvaz, F.R. (2014) Maladies hépatiques chroniques et diabète. *Revue Médicale Suisse*, **10**, 1254-1260. <https://doi.org/10.53738/revmed.2014.10.433.1254>
- [7] Latrech, H. and Baizri, H. (2009) Endocrinology Diabetology Nutrition. Elsevier Masson.
- [8] Baldé, N.M., Camara, A., Kouroum, K. and Kaké, A. (2007) Clinical Characteristics of Hepatitis B and HIV Seroprevalence in 248 Diabetics in Conakry, Guinea. *Black African Medicine*, **5403**, 174-178.
- [9] Kabbaj, N., Errabih, I., Guédira, M., El Atmani, H., Benabed, K., Al Hamany, Z., *et al.* (2006) Hépatite virale C et diabète: Influence du diabète sur l'évolution de l'hépatopathie. *Annales d'Endocrinologie*, **67**, 233-237. [https://doi.org/10.1016/s0003-4266\(06\)72591-4](https://doi.org/10.1016/s0003-4266(06)72591-4)
- [10] Schillie, S.F., Xing, J., Murphy, T.V. and Hu, D.J. (2012) Prevalence of Hepatitis B Virus Infection among Persons with Diagnosed Diabetes in the United States, 1999-2010. *Journal of Viral Hepatitis*, **19**, 674-676. <http://www.ncbi.nlm.nih.gov/pubmed>
- [11] CDC (2012) Diabetes and Hepatitis B Vaccination. [http://www.cdc.gov/diabetes/pubs/pdf/hepb\\_vaccination.pdf](http://www.cdc.gov/diabetes/pubs/pdf/hepb_vaccination.pdf)
- [12] Ameer, F.Z., Ben Amor, S., Ghannei, O., Ben Mansour, W., Ben Chaaben, N. and Safer, L. (2021) Prévalence du diabète type 2 chez les patients ayant une stéatose

hépatique non alcoolique. *Annales d'Endocrinologie*, **82**, 506.

<https://doi.org/10.1016/j.ando.2021.08.742>

- [13] Diarra, M.T., Konaté, A., Diakité, Y., Doumbia Samaké, K., Sow Coulibaly, H., Kas-sambra, Y., *et al.* (2013) Infection par le virus de l'hépatite C chez les patients di-abétiques traités au CHU Gabriel Touré et au Centre de lutte contre le diabète de Bamako (Mali). *Journal Africain d'Hépatologie-Gastroentérologie*, **7**, 188-191. <https://doi.org/10.1007/s12157-013-0487-7>
- [14] Geist, C. (2013) Admission for Deterioration of "General Condition" to the Emer-gency Reception and Treatment Service (SAU) of the New Civil Hospital of Stras-bourg. *Urgences* 2014, 1-9.
- [15] Ouavene, J.O., Koffi, B., Mobima, T., Bekondji, C., Massengue, A. and Guenebem, A.K. (2014) Liver Cirrhosis at the Bangui Friendship Hospital: Epidemiological, Clin-ical, Ultrasound Aspects and Diagnostic Problems. *African Journal of Medical Imag-ing*, **5**, 1-2.
- [16] Mahamane, S.M.A., Ada, A., Tchatath, N.N.V., Daou, M., Brah, S., Andia, A., *et al.* (2018) Particularities of Diabetes in Subjects Aged Over 60 Years in Niger. *Health Sciences and Diseases*, **19**, 10-14.
- [17] Pais, R. (2017) Diabète, facteur d'aggravation des hépatopathies. *Médecine des Mal-adies Métaboliques*, **11**, 687-691. [https://doi.org/10.1016/s1957-2557\(17\)30164-5](https://doi.org/10.1016/s1957-2557(17)30164-5)